

April 23, 2014

TO: Project File
FROM: Brendan LeBlanc (based upon Gavin Oien’s report write-up)
SUBJECT: Project Closeout Summary for Columbia River Bridges & Approaches Design Build Procurement – *Roadway*

Executive Summary

This memorandum provides the status of the work for the development of the Columbia River Bridges & Approaches Design Build Procurement, specifically addressing the following technical focus areas:

- Highway Design
- Construction Staging Sequence Proof of Concept
- Highway Concept Plans
- Highway Design Deviations and Exceptions

This memo overviews the status of the work, outstanding work and next steps, an overview of project history, key decisions, and information on key documents and references. This memorandum, assembled at the time of project closeout, is intended to provide adequate information to allow project start-up within a year’s time-frame.

Status of Work

The work includes the following:

- DB Section 141.21 – Roadway Geometrics. This section covers the requirements for the geometric layout of roadways.
- DB Section 141.23 – Guardrails and Barriers. This section covers the requirements for roadside and median shielding.
- Highway Conceptual Plans
- Draft Design Deviations and Exceptions

The following deliverables were completed at the approximate level of completeness as identified in Table 1, at the time of project closeout.

TABLE 1.
 CRBA DB Procurement Deliverables Status Summary
Status of Deliverables for the CRBA Design Build Procurement Development

TASK	DELIVERABLE	APPROX. PERCENT COMPLETE	STATUS OF WORK
------	-------------	--------------------------	----------------

4.3	Draft technical Performance Requirements - provision DB 141.21 – Roadway Geometrics	90%	<p>All page turns have been completed and page turn comments have been addressed. Continued clean up of DB 141 for formatting, language, terminology, acronyms, interdisciplinary coordination, project interfaces, and other outstanding issues. A few comments and design issues remained unresolved, some of which include the following:</p> <ul style="list-style-type: none"> • Waiting for traffic analysis to verify intersection storage lengths. • Prepare an exhibit indicating the location of the permitted accesses. • Identify the location for contractor delivery of salvaged materials • Coordinate with the WSDOT pavement engineer to finalize the pavement design in Washington. • Describing the requirements for “forward compatibility” with future and adjacent projects remains unfinished. In particular, how the DB contractor should accommodate the future walls between SR14 and Mill Plain needs to be described. The future walls would be required with the deferred Washington North project, which was not part of the CRC First Phase project, but is included in the ROD. This forward compatibility included all interfaces between the CRBA and the deferred Washington North project: e.g. ramp NB I-5 to C Street; ramp WB SR 14 to NB I-5; retaining and noise walls on I-5 and CD lanes for Washington North project; ramp NB I-5 to Mill Plain/4th Plain lanes/gore points. <p>These specific issues and other comments are documented in detail in the ‘RFP Comment Resolution Log-20140224-Review.xlsx’ spreadsheet. This file is in the ProjectWise directory for the RFP.</p>
4.3	Draft technical Performance Requirements - provision DB 141.23 – Guardrails and Barriers	90%	<p>All page turns have been completed and page turn comments have been addressed. Continued clean up of DB 141 for formatting, language, terminology, acronyms, interdisciplinary coordination, project interfaces, and other outstanding issues. A few comments and design issues remained unresolved, some of which include the following:</p> <ul style="list-style-type: none"> • Identify the WSDOT preferred impact attenuator for use in Washington. • Obtain the letter allowing the selection of a single proprietary attenuator <p>These specific issues and other comments are documented in detail in the ‘RFP Comment Resolution Log-20140224-Review.xlsx’ spreadsheet. This file is in the ProjectWise directory for the RFP.</p>
	Highway Conceptual Plans	20% to 30%	Updating needs to be completed. Typically conceptual plans for Design-Build RFPs are at the 30% level.
	ODOT Design Exceptions	30%	Work in progress. Illustrative exhibits need to be created.
	WSDOT Design Deviations	0%	Work not started.
15.1	Updated bid quantities for the CRBA	0%	Work not started.

Table Notes:

1. Table status as of March 14, 2014.

Known Issues

Currently, there are no known issues.

Outstanding Work

The following is a summary of outstanding highway design work and next steps at the time of closeout that was not started, but necessary for the development of the DB Procurement final RFP for the CRBA Package:

- Prepare a conceptual design layout of the exit ramp from I-5 Northbound to SR 14 Eastbound as a 2 lane exit.
- Update the Tomahawk Island Drive conceptual design for right in/right out road east of the I-5 North to Hayden Island exit ramp to a 25 mph design speed.
- Revise the conceptual design layout of nine (9) intersections to accommodate the needed storage length based on traffic model. These include the following intersections: Marine Drive at ramp terminal, Union Court/Marine Way at Vancouver Way, MLK connection at Vancouver Way, Hayden Island Drive at Mainland Connector road, Connector Road at Janzen Drive, SR 14 at Columbia Street, Northbound exit ramp at Mill Plain, Northbound exit ramp at Fourth Plain, and the Southbound exit ramp at Fourth Plain
- Revise the conceptual design lane configuration of Mill Plain Boulevard based on the traffic model.
- Revise the conceptual design lane configuration of Fourth Plain Boulevard based on the traffic model.
- Update the Inroads finished grade digital terrain model (DTM) model of the SR 14 interchange alignments to reflect the current conceptual design.
- Review and make modifications to the exit ramp from I-5 Southbound to Marine Drive in order to accommodate a future entrance ramp from Hayden Island situated between the ramp structure and the existing mainline structure over the North Portland Harbor.
- After July 2013, when the project transferred to an Oregon led project, the construction quantities were updated. But since then, no maintenance of the quantity take-off has been performed and the with any construction scope changes, the construction quantities need to be updated.
- Work to coordinate local agency agreements was suspended after the Washington funding was not extended. During the Oregon led duration, an intergovernmental agreement had not been executed, so coordination is still needed. For both cities, there is interest in an overall program approach. This has proven to be challenging because of the various states of advancement in each of the projects within the CRC First Phase Project – e.g. the Marine Drive Interchange project, a DBB project, is much less advanced than the CRBA. The City of Portland takes particular interest in but not limited to the following elements: bicycle and pedestrian system, number of lanes, intersection phasing, width of the facilities, disposition of the transit station, and stormwater treatment methods. Although the City's Design Overlay covers the MC bridge, it is anticipated there will be more interest in the rest of the streets and surrounding areas on Hayden Island in the CRBA project. The City of Vancouver takes particular interest in but not limited to the following elements: impact to the Columbia River waterfront area, sidewalk widths, effect on local businesses, freeway access, and traffic performance on the local system.
- Interdisciplinary coordination is still needed. This effort was just starting prior to the project shutdown. Integrating the requirements related to project interface is still needed, that is describing the limits of construction and the schedule requirements in detail. After the intergovernmental agreements are in place, discussions with the local agencies will be initiated and reflecting their input in the performance requirements will be needed.

The following is a summary of outstanding construction staging sequence proof of concept work and next steps at the time of closeout that was not started, but necessary for the development of the DB Procurement final RFP for the CRBA Package:

- Initially a concept was developed to a level of completion under the WSDOT contract but it did not continue to get updated with changes to the scope, schedule and interface coordination. Most recently the work to keep it current with the scope, schedule and interface assumptions was authorized and a good portion of that work was complete. The base design files are developed to a state that matches the current understanding of scope, schedule and interface assumptions. A check on the super elevation transitions is still required, and the staging design DTMs need to be updated.
- The exhibits are partially updated. Stages 1-3 are up to date but stage 4 and beyond, still require updates to the description on the plans sheets and in the sequencing spreadsheet descriptions. A thorough QC check is outstanding as well.

The following is a summary of outstanding highway concept plans work and next steps at the time of closeout that was not started, but necessary for the development of the DB Procurement final RFP for the CRBA Package:

- Complete the Agency review and address Agency comments from that review.
- Make sure the improvements shown reflect the current scope.
- Review the plans for references to WSDOT standards, manuals and specifications and remove references.
- Suggestion to show pavement removal areas.
- Suggestion to show roadway ownership because of the number of private roads that appear to be public.
- Update the Hayden Island roadway section to reflect the surfacing design changes.
- Sheet GB18 is not needed.
- Need to add the existing bridge removal plans to the set.
- In addition, other updates were known or anticipated based on an updated traffic analysis to be performed, inevitable refinements through the design exception process, and other design changes as identified above.

The work for the design exceptions and deviations was in process before the project was stopped. Work on the Washington design deviations had not started but the Oregon design exceptions were progressed to an approximate 30% level of completion. This included the writing of a full narrative using the ODOT exception form for all the identified Oregon design exceptions along with necessary figures, data, calculations, alternatives analysis, rough cost analysis, design description, design justification and supporting CAD work. A working CAD file was created to complete necessary calculations and identify exception locations. Unique crash reports were generated for each exception from the ODOT website, sorted in Excel and used to provide context for the existing crash history with the roadway design. Work to create the illustrative exhibits is still needed.

A tabulation of the known Oregon design exceptions is provided below:

Number	Alignment/ Location	Design Exceptions
1	I-5 SB on CRB	Spiral Length
2	I-5 NB on CRB	Spiral Length
3	I-5 SB on CRB	Superelevation Rate
4	I-5 NB on CRB	Superelevation Rate
5	I-5 SB on CRB	Downgrade
6	I-5 NB on CRB	Upgrade

7	I-5 SB Sag north of North Portland Harbor Bridge	Sag Vertical Curve
8	I-5 NB Sag north of North Portland Harbor Bridge	Sag Vertical Curve
9	5-RC-NB	Median Width
10	5-RC-SB	Median Width
11	5-RC-NB	Right Shoulder Width on the existing North Portland Harbor Bridge
12	5-RC-SB	Left Shoulder Width on the existing North Portland Harbor Bridge
13	Marine Drive entrance ramp to I-5 NB	Gore Width
14	I-5 SB lane drop between 5S-MLK and A-5S	Taper Rate
15	5N-HI	Spiral Length
16	5N-HI	Deceleration Length
17	HI-5N	Ramp Geometry
18	HI-5N	Spiral Length
19	5S-A	Spiral Length
20	A-5S to 5S-MD (extg)	Weave Length
21	JD	Vertical Clearance
22	JD	Flood Recurrence (below 50 year flood)
23	5N-HI	SSD

A tabulation of the known Washington design deviations is provided below:

Number	Alignment/ Location	Design Deviation
1	I-5 NB at Evergreen	Shoulder Width
2	I-5 between MP-5S and 5S-14E	Weave Distance
3	SR14	Shoulder Width
4	14W-CS ramp between 14W-5S and 14W/CST-5S	Off-Off, Turning Roadway (System Interchange)
5	5S-14E ramp between MA-14E and 5N-14E	On-On Freeway
6	C Street at 6 th /7 th and "C" Street ramp terminal	Limited Access

The draft design exceptions in progress are located at the following network location: G:\CRC\CRC Workpaper Files\River Crossing Procurement\PD.45.13 Highway Design Documents\Design Exceptions-Deviations\Oregon.

Key Decisions

Key project decisions include:

- At the SR14 ramp terminal intersection at 4th and Columbia Street, a decision was made to provide a signalized intersection instead of a roundabout. While the roundabout was shown to operate more favorably, the construction of a signalized intersection in addition to the reconfiguration of the Columbia Park and Ride, helped to avoid impact to the Wallis owned building on the northwest corner of the intersection. This decision was documented in the NEPA re-evaluation.

- During the EIS both 10-lane and 12-lane alternatives for the main bridge over the Columbia River were discussed but in the ROD a 10-lane configuration was documented to be advanced. In order to match into the existing highway configuration, maintain proper lane balance and accommodate future projects with little re-work, the lane configuration described in the Performance Requirements in the RFP is proposed. The widths required on the main bridge also will accommodate 3 lanes in each direction during construction (for a total of 6 lanes on the southbound bridge at one time, with narrow shoulders) and provides the flexibility for the contractor to stage the project according to his proposal.
- A decision was made to update the concept plans to match the current understanding of scope, schedule and interface assumptions. For this to be useful management tool, the concept design should be kept current as the scope, schedule and interfaces continue to be updated.
- In the transition from a WSDOT led procurement to an ODOT led procurement, the general approach in describing the design and construction requirements changed from showing the contractor what the requirements are to telling the contractor what the requirements are. As a result, less emphasis was placed on the concept plans and more emphasis was placed on the text in the requirements.
- In the development of the staging concept design, it was determined that the existing wind energy freight route from the Port of Vancouver to SR14 would need to be relocated in one of the first stages of construction. It was determined that the design and construction would best be handled by the CRBA design-build contractor to allow him the flexibility to dictate his own schedule. It was determined that Mill Plain would become the new route but there are existing vertical clearance restrictions along that route for the over dimensional loads. The design and construction requirements to improve the vertical clearance are provided in the roadway geometrics performance requirements.
- After transferring the leadership of the project to Oregon, the decision was made to update the design exceptions and deviations to match the current design. After approval, the conceptual design exceptions would have been included in the performance requirements as engineering data documents on which the design build contractor could rely. Upon design development, the design build contractor would have needed to submit new design exceptions based on the new design.
- It was also decided that sub-standard geometry elements in Washington would be documented through the ODOT design exception process rather than the WSDOT design deviation process. It was assumed that any issues with approval authority would be resolved through the intergovernmental agreement between Oregon and Washington.

Project Records

Records of the work conducted under this task can be found at:

- See Word files in ProjectWise master directory.
- See Meeting Notes in ProjectWise master directory.

Standards & Versions

Standards used for the work are listed in the DB 141.21 – Roadway Geometrics and DB 141.23 – Guardrails and Barriers.

BEL:bel

cc: Document Controls

